

**Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal**

Section 1. General administrative information

Assess Adult Steelhead Escapement in the Secesh River System

Bonneville project number, if an ongoing project 9151

Business name of agency, institution or organization requesting funding
Nez Perce Tribe

Business acronym (if appropriate) NPT

Proposal contact person or principal investigator:

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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name
Genetics lab to be determined			

NPPC Program Measure Number(s) which this project addresses.
4.2a

NMFS Biological Opinion Number(s) which this project addresses.
ESA Section 10 Permit

Other planning document references.
Wy Kan Ush Me Wa Kush Wit - 5D pages 1-3

Subbasin.

Short description.

Abundance of spawning steelhead will be assessed by multiple ground counts and sampling kelts, captured by non-lethal means. Information gathered will enhance managements knowledge of the stocks origin and life history characteristics.

Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish		Construction		Watershed
	Resident fish		O & M	+	Biodiversity/genetics
	Wildlife		Production	X	Population dynamics
	Oceans/estuaries	X	Research		Ecosystems
	Climate		Monitoring/eval.		Flow/survival
	Other		Resource mgmt		Fish disease
			Planning/admin.		Supplementation
			Enforcement		Wildlife habitat en-
			Acquisitions		hancement/restoration

Other keywords.

Stock Identification, life history, Steelhead, Escapement

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship
9005500	Steelhead Supplementation Studies	Reciprocal transfer of data/coordination
9703000	Listed Stock Adult Escapement Monitoring	Reciprocal transfer of data/coordination
8909802	Idaho Salmon Supplementation - NPT	Juvenile production/life history
9707300	Idaho Dept. of Fish and Game	Cooperative PIT tagging: SAR

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Assess abundance and timing of steelhead spawning in Lake Creek and the Secesh River	a	conduct weekly spawning ground surveys for redds and adult steelhead

2	Determine biological characteristics of returning adult steelhead	a	conduct weekly efforts to capture adults using non-lethal means
		b	determine the age and sex ratio of the spawning population from carcasses and kelts
		c	collect genetic samples before releasing the fish
		d	record external mark and tags (eg. fin clip, jaw, radio, PIT)
3	Transfer of Technology	a	prepare annual report with recommendations regarding feasibility of techniques and spawning population status

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	02/1999	06/2000	45
2	02/1999	06/2000	45
3	06/1999	12/2000	10

Schedule constraints.

Unusually harsh winter storms/environmental conditions and challenges with access

Completion date.

2000

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel	One Technician and two biological aides at 800 hr per year	23000
Fringe benefits		5000
Supplies, materials, non-expendable property	dip nets, basket traps, axes, waders, snowshoes	3,000
Operations & maintenance		2,000
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	snowmobile	6,500
PIT tags	# of tags:	
Travel	3 people, 54 days, lodging, per diem	5,000

Indirect costs	@ 29.2%	12,994
Subcontracts	independent genetic analysis	8,000
Other		
TOTAL		65,494

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	60,000			
O&M as % of total	100			

Section 6. Abstract

Steelhead populations have been declining and have been listed under the Endangered Species Act. Present knowledge of wild/natural adult steelhead escapement has been primarily limited to enumeration at Lower Granite Dam. Return characteristics for individual spawning aggregates are largely unknown. This project will provide managers with baseline data on the spawning aggregate, origin, life history characteristics

This study is designed to evaluate the feasibility of spawning ground abundance monitoring techniques for adult steelhead and to identify the status of adult steelhead escapement in the Secesh River system. The study will use intensive redd counts as an index of relative abundance and spawning distribution in tributary streams. Biological characteristics (including: spawner age composition, length-age relationships, adult pre-spawning mortality, genetic sampling, and hatchery:wild composition on spawning grounds) will be collected from carcasses and kelts. Kelts will be captured by non-lethal means and tagged to prevent duplication of data.

This is a short term study, after one year we expect to describe baseline data on relative abundance and biological characteristics and assess our sampling techniques. At the completion of the second year we will be able to describe the age structure of the population, determine the stocks origin and assess the feasibility of assessing additional spawning aggregates in the Snake River Basin.

Section 7. Project description

a. Technical and/or scientific background.

Throughout the Clearwater and Salmon Basin there has been little done to define the escapement of adult steelhead to individual spawning aggregates. Environmental conditions effecting access to and stream clarity make traditional methods used for salmon difficult. Current escapement of steelhead is attempted using weirs on Fish and Clear creeks in the Clearwater Basin and Little Sheep Creek in the Innaha River Basin. In the Salmon River Basin limited aerial surveys on the South Fork of the Salmon River,

ground counts below the Sawtooth Weir, and some electrofishing in the Middle Fork and Upper of the Salmon River have been attempted but have not provided consistent results.

Studies conducted by the Nez Perce Tribe in 1983 and 1984 suggested that A-run populations in the lower tributaries of the Clearwater River were genetically unique (Kucera & Johnson 1986). Genetic variations among these fish were compared to other Snake River Basin Steelhead populations (Milner & Teal 1986). The Nez Perce Tribe continued investigating populations of steelhead by cooperating in a study in 1995 and 1996 (Witty 1995 and Hesse 1997). Among the later projects objectives were to collect information on the genetic makeup of wild A-run steelhead and compare with Dworshak National Fish Hatchery B-run steelhead to determine if a detectable influence was occurring and evaluate potential adverse impacts of hatchery straying. The study was unable to accurately assess adult straying utilizing a weir due to high water events.

There is much uncertainty surrounding the population status of steelhead in the Clearwater and Salmon River Basins. The Fish and Wildlife Program Measure 4.2a states that Asalmon and steelhead research under this program is expected to be designed to reduce scientific uncertainty and increase knowledge to achieve the salmon and steelhead goal and policies of this program.≡ This study will examine adult steelhead returns to an individual spawning aggregate and test feasibility of methods. It will also provide management with the knowledge of the stocks genetic composition and origin.

The study does not call for a weir due to the logistical and environmental problems of installation/operation of a weir during spring runoff. It will rely heavily on redd counts and sampling spawned out steelhead kelts. Kelts will be sampled by traditional dip nets or basket traps. These are methods that pose no threat to the health of the fish and have been proven to work over thousands of years by tribal fisherman.

b. Proposal objectives.

Objective 1. Assess abundance and timing of steelhead spawning in Lake Creek and the Secesh River.

- a) Multiple ground counts will be conducted at the start of each week. The number of new redds, and adults spotted will be recorded for all transects.

Objective 2. Determine the biological characteristics of returning adult steelhead.

- a) Kelts will be targeted for capture by dip net or basket traps after redd counts. Fishing sites will be chosen weekly and the number of hours fished will be recorded.
- b) Scales and fork lengths will be collected from captured fish. Scale analysis paired with fork length data will provide us with base line age/length data.
- c) Otoliths, scales, and fork lengths will be collected from recovered carcasses. While our chances of recovering a carcass are slim due to the nature of kelts otoliths would confirm our scale analysis.
- d) Genetic samples will be collected in the same manor that the Idaho Salmon

Supplementation studies collected genetic samples. A small portion of the right pelvic fin will be removed and preserved in an alcohol solution for later analysis.
e) Collect fin clip, jaw, radio, floy, or Pit tags. A remote chance exists of recovering a tag that would give an indication of straying, migration timing, or age structure.

Objective 3: Transfer/apply Technology.

- a) Annual report addressing the feasibility of the methods
- b) Annual report documenting the status and characteristics of the returning adult steelhead

c. Rationale and significance to Regional Programs.

With the focus regional programs being mainly on salmon, direct relationships to steelhead are not spelled out. However, the principles behind the 1994 FWP, various salmon recovery plans, and the endangered species act all apply to proper management of steelhead populations. All plans call for/request/or require an understanding of current population status and life history characteristics. This project will start to document the status of individual spawning groups and what methods will provide accurate and reliable data.

d. Project history

New Project

e. Methods.

Spawning ground surveys would be conducted weekly from February 15 to June 15. This will increase redd count accuracy, provide spawning timing, and maximize adult carcass collections. A multiple ground count census has been used to delineate when peak chinook salmon spawning occurred and when spawning was completed (Schwartzberg 1987). Number of new redds, number of live fish, and carcasses will be recorded while walking up/down or floating (cataraft) down the stream, in the respective survey reaches. The multiple ground census will aid in redd identification especially where multiple redds occurred or when high runoff/rainstorm events caused heavy siltation of redds.

Redds will be marked with flagging that records the date observed and an identification number. Different colored flagging will be used during each survey period. Marking redd locations with flags and recording notes on each redd will be beneficial in areas where multiple redds occurred and in identifying individual redds for redd visibility observations. A conservative count will be made in areas when multiple redds are present.

Steelhead carcasses will be examined and biological information collected. Fish are examined for any marks/tags and measured to the nearest 0.5 cm in mid-eye hypural plate length and fork length. The mid-eye hypural length is recorded, as often times an accurate

fork length can not be obtained due to decomposition and degeneration of the caudal fin. Scales will be removed from carcasses when available and placed in labeled coin envelopes for ageing or scale pattern analysis. Scales are removed from a preferred area located two to three rows above the lateral line on a diagonal scale column running from the posterior base of the dorsal fin to the anterior base of the anal fin (Schwartzberg 1987). Portions of ventral/pectoral fins are collected for genetic analysis. Fish are also opened up to determine the sex of the fish and stage of spawning (i.e. - % spent) and the tails cut off to prevent duplicate sampling.

Collection of live adult steelhead using non-lethal methods will be done utilizing traditional fishing techniques (dipnets and fish baskets). Visual observations of fish will be required prior to collection. Fish that are actively spawning will not be harassed. Sampling will occur two days a week throughout survey period. Biological information requiring nonlethal techniques including: length, sex, external marks (fin clips), scale and genetic samples will be collected from kelts (post-spawned).

Environmental conditions will be recorded over the entire survey period (February 15 to June 15). Water temperature, turbidity and discharge will be recorded along with climatic conditions.

After one year we expect to describe baseline data on relative abundance and biological characteristics and assess our sampling techniques. At the completion of the second year we will be able to describe the age structure of the population, determine the stocks origin and assess the feasibility of assessing additional spawning aggregates in the Snake River Basin.

f. Facilities and equipment.

The project to assess adult steelhead escapement in the Secesh River system would be operated out the Nez Perce Tribe's McCall field office. Current facilities are adequate to support the additional employees for administrative and technical preparation work. This projects would utilize equipment such as (vehicles, computers, one snowmobile and trailer) associated with ongoing research but not fully utilized at that time of year. One additional snowmobile would be required for safety purposes (included in budget).

g. References.

Columbia River Basin Fish and Wildlife Program. 1994. Northwest Power Planning Council. Portland, OR.

Hesse, J. 1997. A-run steelhead status in tributaries of the lower Clearwater River, Idaho. In Interactions of hatchery and wild steelhead in the Clearwater River of Idaho. 1995 Progress Report, Fisheries Stewardship Project, USFWS Report. November 1997.

Kucera, P.A. and D.B. Johnson. 1986. A biological and physical inventory of the streams within the Nez Perce Reservation. BPA Report DOE/BP-10068-1.

Schwartzberg, M. 1987. Columbia upriver salmon stock identification report BField operation guide. Tech. Rep 87-1. Columbia River -Inter Tribal Fish Commission, Portland, Oregon.

Snake River Recovery Plan. 1994. National Marine Fisheries Service. Seattle, WA.

Witty, K.L. 1995. A-run steelhead production in selected tributary streams of the lower Clearwater River Idaho. Ages 2-24 in Interactions of hatchery and wild steelhead in the Clearwater River of Idaho. 1994 Progress Report, Fisheries Stewardship Project, USFWS Report

Wy-Kan-Ush-Mi Wa-Kish-Wit (Spirit of the Salmon). 1995. Columbia River Inter-tribal Fish Commission. Portland, OR.

Section 8. Relationships to other projects

This project will complement data on the status and life history data being collected on juvenile steelhead in the Secesh River system under the Idaho Salmon Supplementation project (8909802). This information when combine with chinook salmon escapement data from the Secesh system collected under the Listed Stock Chinook Salmon Escapement Monitoring project (9703000) will provide a complete picture of anadromous fish production in an unsupplemented population. The Idaho Department of Fish and Game project to monitor and evaluation natural production (9107300) is estimating smolt to adult survival of steelhead with a basin wide approach utilizing PIT tags. Our project will help provide optional methods to monitor adult returns for that study.

Section 9. Key personnel

Technical Advisor: Jay A. Hesse, Research Coordinator, no project funding associated
Nez Perce Tribe Department of Fisheries Resources Management

Education: M.S. in Fisheries, Michigan State University, 1994
B.S. in Fisheries and Wildlife, Michigan State University, 1992

Duties: Technical direction and supervision of fisheries research projects, research coordination, Nez Perce Tribe LSRCP project implementation, report writing, monitoring and evaluation plan and proposal development, tribal fisheries research representation at federal and state meetings, budget preparation, personnel supervision.

Experience: Project Leader, Idaho Salmon Supplementation Study. Nez Perce Tribe. July 1994 - October 1997.

Publications: Hesse, J. 1997. A-run steelhead status in tributaries of the lower Clearwater River, Idaho. In Interactions of hatchery and wild steelhead in the Clearwater River of Idaho. 1995 Progress Report, Fisheries Stewardship Project, USFWS Report. November 1997.

Hesse, J.A., P.J. Cleary, and B.D. Arnsberg. 1995. Salmon Supplementation Studies in Idaho Rivers. Annual Report - 1994. U.S. Department of Energy - Bonneville Power Administration. Portland, Oregon.

Hesse, J.A. and B.D. Arnsberg 1994. Salmon Supplementation Studies in Idaho Rivers. Annual Report - 1993. U.S. Department of Energy - Bonneville Power Administration. Portland, Oregon.

Hesse, J.A. 1994. Contribution of hatchery and natural chinook salmon to the eastern Lake Michigan fishery, 1992-1993. Masters Thesis, Michigan State University.

Dave Faurot, Project Leader, 1 FTE
Nez Perce Tribe, Department of Fisheries Resources Management

Education:

B.S. Degree in Engineering	U.S. Coast Guard Academy, New London, CN	1965
M.S. Degree in Aquatic Ecology	University of Michigan, Ann Arbor, MI	1980

Pertinent Employment:

National Marine Fisheries Service	Pasco, WA	1976-1982
Primary assignment was research and study of the effects of dams on migration rates, timing, and survival of juvenile salmon and steelhead in the Columbia River system.		
Alaska Department of Fish and Game	Soldotna, AK	1983-1984
Conducted creel census and tag and release study on adult chinook salmon.		
U S Fish and Wildlife Service	Kenai, AK	1985-1990
Performed scientific research and administrative duties in planning, implementing and evaluating fishery resource management in naturally functioning wilderness areas.		

Publications:

Faurot, D.A. 1980. Juvenile salmonid outmigration of the Mid-Columbia River, 1977. M.S. Thesis, University of Michigan.

Sims, C.W., J.G. Williams, D.A. Faurot, R.C. Johnsen, and D.A. Brege. 1981. Migrational characteristics of juvenile salmon and steelhead in the Columbia River

- basin, 1980 Vol II. Final Report to the U.S. Army Corps of Engineers. Seattle, WA.
- Faurot, D.A., L.C. Stuehrenberg, and C.W. Sims. 1982. Radio tracking of juvenile salmonids in John Day Reservoir, 1981. Final Report to the U.S. Army Corps of Engineers, Seattle, WA.
- Faurot, Dave, and Ray N. Jones. 1990. Run timing and spawning distribution of coho and late run chinook salmon in the Kasilof River watershed, Alaska, 1987. U.S. Fish and Wildlife Service, Alaska Fisheries Technical Report Number 9. Anchorage, Alaska.
- Faurot, Dave. 1992. Fishery resources in the Kisaralik River basin, Yukon Delta National Wildlife Refuge, Alaska. U.S. Fish and Wildlife Service, Alaska Fisheries Technical Report Series. Anchorage, AK.

Section 10. Information/technology transfer

Annual reports will be submitted for publication as BPA documents. Regional transfer of the applicability of methods utilized will be accomplished through presentations at Idaho chapter of AFS and at regular Nez Perce Tribe/ODFW/IDFG coordination meetings.